Study of the Postoperative Nausea and Vomiting Incidence for Pediatric Surgery in Baghdad Educational Hospital

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Abstract

Generally speaking postoperative nausea and vomiting (PONV) as the most conventional complaint afterward anesthesia that can attend the desolation like bleeding, electrolyte disorders, gastric content aspiration as well as delay hospital remittance. Postoperative emesis where as has a high incidence even though the extensive whole of research done in this field and the variety of antiemetic drugs accessible. In order to manage this crisis, they need a multi approach which can include the certified analgesia, emetogenic anesthetic techniques as well as appropriate intravenous hydration. The current study aims to assess the postoperative nausea and vomiting incidence for pediatric undergoing surgical operations. A total number of 140 patients (74 male and 66 female) with age ranges (6-12) years old, duration of surgery equals or less than 30 min and body mass index less than 30 . General anesthesia is achieved for admitted elective patients. All patients are confirming according the questions of questionnaire; we monitor the incidence of nausea and vomiting in the recovery room. We conclude that the patients with (30%) have an incidence of nausea and vomiting postoperatively that may be related by causes (age, history of PONV, anxiety , type of operation and anesthetic drug).and patients with (70%) have no nausea and vomiting incidence postoperatively that may be related by causes (sex, obesity and inhalation agents).

1-Introduction

Generally speaking Post operative nausea and vomiting (PONV) is a known complication of anesthesia with reported incidence between 13-42%. Postoperative emesis associated to ambulatory surgery escalates the health care costs due to intervention, delay in discharge or hospital admission [1-2]. The prophylaxis is impact by anti emetic agents is conceded more cost effective than the treatment [3]. The progression of postoperative emesis in

children can be twice as high as in adults, which suggest a greater need for antiemetic prophylaxis in this population [4-5].

Generally, within the first 24 hr after the surgical influencing, there is up to 80% of patients have an incidence of nausea and vomiting postoperatively. For most, postoperative emesis is easily manageable but for a smaller degree, Symptoms of postoperative emesis almost can be manage, but in some conditions can be characterize as the worse than the painful perception postoperatively. It is a popular misapprehension that general anesthesia are solely dependable for postoperative nausea and vomiting (PONV) eventuation The surgical operations under anesthesia require not only a pharmacological but also a physical `attack` on the patients, since the most popular misapprehension that general anesthesia is solely dependable for postoperative nausea and vomiting (PONV) eventuation. Providentially, the multi -factorial etiology of postoperative nausea and vomiting (PONV) incidence permit itself the intervention using a diversity form of options in treatment [6].

- As an evolutionary defensive means, the vomiting reflex almost certainly developed in opposition to hurtful substances or toxins ingestion. Also, as a result to a wide range of pathological and environmental triggers, consequently like smell, sight, gastrointestinal disorder as well as motion, the vomiting can more effective [6]. Nausea can be summarize as a sensation allied with the absolute impression of the compulsion in order to vomit. In other hand, vomiting can be express as a potent expulsion of upper gastrointestinal contents by way of the mouth, brought regarding by powerful abdominal muscles contraction. Both are protective reflexes against the toxins intake (that were stimulate the gastrointestinal tract chemoreceptors) eventually. Furthermore, they act as a response to vestibular, olfactory as well as psychogenic stimuli. Improved salivation; gastrointestinal relaxation; duodenal retro-peristalsis as well as pallor with tachycardia are symptoms associated with nausea. Vomiting and nausea (frequent exertions of emesis without ejection of stomach inside) are brainstem reaction; even as the nausea involves higher brain regions [6].

Post operative emesis has many influencing factors such as:

Factors related with patients; preoperative causes; intra operative reasons and anesthetic means as well as post operative causes [6].

2-Factors related with patients:

a) Age: The percentage of the postoperative nausea and vomiting incidence induce subsequently as the infants (5%), for less than 5 years (25%) as well as for age ranges 6-16 (42-51%).

b) Sex: Adult women are 2-4 times to be expected to endure from PONV than men, possibly will be because of female hormones.

c) Weight: Patients are report to have more PONV probably since either the excessive adipose tissue serves as storage that intended for anesthetic agents or because of excessive estrogen production by adipose tissue.

d) Motion sickness: Post operative emesis is inducing clearly in patients who are susceptible to motion sickness.

e) Detention of gastric empty: Many of intra abdominal pathology such as: increase ICT; diabetes mellitus; pregnancy; hypothyroidism as well as motion sickness are increased risk of PONV.

f) Smoking: Smokers are less sensitive to PONV than non smokers.

Pre-operative causes:

a) Fasting: The recent food intake or extended pre-operative fasting can both influence greatly the incidence of PONV.

b) State of anxiety: The anxiety and psychological stress can stimulate the emesis.

c) Surgical conditions: Such as cancer patients on chemotherapy; pregnancy and abortion; GIT obstruction as well as increased ICT.

d) Pre-medication: Gastric empty inhibition and esophageal tone reducing both can produce by Atropine using. Opioids like morphine and pethidine can induce the secretion of stomach, reduce GI motility that decrease the gastric emptying [6].

3-Intraoperative causes

1. ***Anesthetic means***

a) Intubation: Insertion of air ways instruments can motivate the afferent pharyngeal mechanoreceptor that directly induces the emesis process.

b) Anesthetic plane: The anesthesia at deep level or inflation of gastric region through mask ventilation of mask may be possibly the contributing factors [7].

c) Anesthesia: sudden vestibular discharge may be produce due to patient head movement during anesthesia that may be increase the occurrence of nausea and vomiting postoperatively [8].

d) Anesthetic agents:

- ***Nitrous oxide:*** The avoidance of nitrous oxide has a perceptible effect on postoperative emesis diminution particularly in patient with laparoscopic procedures [9],[10].
- ***Balanced anesthesia:*** Nitrous oxide-opioid-relaxant technique is allied with higher of postoperative emesis incidence when it compared with inhalational or total intravenous (IV) technique [11],[12],[13],[14].
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- ***Inhalational agents:*** Cyclopropane and ether as inhalational agents that highly induce the nausea and vomiting postoperatively as a result of endogenous catecholamines releasing unlike the halothane, enflurane, sevoflurane as well as desflurane that have less effect on postoperative nausea and vomiting [15]. The effective role of volatile anesthetic agents on postoperative emesis is dose-dependent and most efficient at the first 2–6 h after surgical influencing [16].
- ***Etomidate:*** Incidence of postoperative emesis is patently raised as a result of incessant etomidate infusion [17].
- ***Ketamine:*** Many studies revealed markedly at the induction: ketamine administration has highly impact on the postoperative nausea and vomiting incidence [18].
- ***Propofol:*** Propofol has an important role on postoperative emesis reduction.
- ***Opioids:*** Opioid receptors that located in CTZ are stimulated throughout the opioid administration causes the emesis [19].
- ***Neuromuscular reversal agents:*** There effects on PONV incidence are uncertain.

2. Anesthetic techniques

The spinal anesthesia has less impact on incidence of PONV than the general anesthesia [6] .

3. Surgical causes

Some surgical sites like: abdominal surgery; ophthalmic surgery; gynecological surgery as well as ENT surgery have high severity of PONV incidence.

4-Patient and Method

The current study enrolled in Baghdad educational hospital at general surgical department with hernia surgical operation (umbilical, inguinal and incision) includes cases as140 patients (74 male and 66 female) with age ranges (6-12) years old, duration of surgery equal or less than 30 min and body mass index less than 30. General anesthesia for admitted elective patients.

All patients don't received:

- Antiemtic drugs
- Opioid drugs
- Antacid drugs

For induction stage, they received (ketamin 1mg/kg, recuronium 0.5mg/kg, sevoflurane 3%). As a maintenance stage, they received (sevoflurane 2%).

Finally, the reversal drugs (atropine0.02mg+neostigmine0.04mg, 1ml for 6 kg)

All patients are check up according the question of questionnaire, we monitor incidence for nausea and vomiting at recovery room

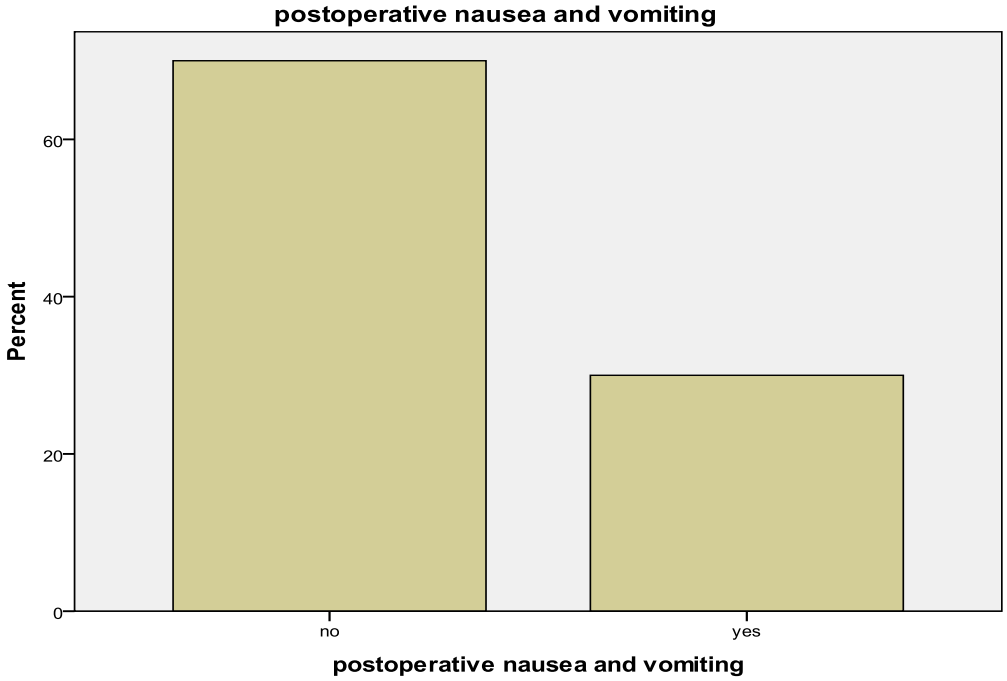
5- Results

The results of the study were statistically analyzed as a percent and accumulative percent **%.** In table (1), shows the percentage of nausea and vomiting incidence in pediatrics post operatively When (98) patients (70%) have no nausea and vomiting post operatively and 42patients (30%) have nausea and vomiting occurrence post operatively (figure 1).

Table (1): Shows the incidence percentage of nausea and vomiting in140 patients.

		Frequency	Percent%	Valid Percent%	Cumulative Percent%
Valid	No	98	70.0	70.0	70.0
	Yes	42	30.0	30.0	100.0
	Total	140	100.0	100.0	

Figure (1): The incidence percentage of nausea and vomiting in140 patients.



Yes": have PONV.
No": have no PONV.

Table (2): Shows the percentage of gender, when (74) patients (52.9%) as male (m) and (66) patients (47.1%) as female (f).

		Frequency	Percent%	Valid Percent%	Cumulative Percent%
Valid	M	74	52.9	52.9	52.9
	F	66	47.1	47.1	100.0
	Total	140	100.0	100.0	

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6- Disscusion

Postoperative nausea and vomiting—usually summarized as a result that remains the most important and distressing complications after surgery, in general, in the current study on children, clearly showed that the 30%, 42 of patients have incidence of PONV (table1),(figure1), this result may be attributed to the causes which have an effect on PONV in pediatric:

1-**Age group:** High percent of incidence of postoperative emesis can be show among pediatric patients as high as 34% at the age ranges from 6–10 years [26, 27, 28, 29].

2- **History of PONV:** Patients with a history of motion Sickness, or migraine are more susceptible to emetogenic stimuli increases among individuals with a personal history of PONV [24, 25].

3-**Anxiety**: The higher attribution of postoperative emesis may be result due to high levels of postoperative pain and anxiety especially of visceral or pelvic origin [26].

4-**Type of operation**: Surgical operations that associated with a high incidence of postoperative emesis in children include strabismus, adenotonsillectomy, hernia repair, orchidopexy, and penile surgery [27].

5-Anesthetic conditions:

a) **Intubation:** Afferent pharyngeal mechanoreceptor is stimulating at once the intubation enhances the emesis.

b) **Anesthesia level**: The profounding anesthetic level or gastric inflation during mask ventilation of mask may be the effective factors

c) **Anesthesia**: sudden vestibular discharge may be produce due to patient head movement during anesthesia that may be increase the occurrence of nausea and vomiting postoperatively [8].

6- **Anesthetic drugs**:

Ketamine*:* Many studies revealed markedly at the induction: ketamine administration has highly impact on the postoperative emesis incidence [18].

In the current study, the result clearly showed that the 70%, 98 of patients don't incidence of PONV table (1),
(figure1) this result may be attributed to the causes which don't have an effect on PONV in pediatric:
1- **Sex**: the effect of gender variation on PONV incidence cannot be clarify in age group of pediatric [28].

2- **Weight**: Patients with high body mass index of more than 30 are more vulnerable to the nausea and vomiting postoperatively [29].

3- **Inhalational agent**: Many inhalational agents like halothane; enflurane; sevoflurane as well as desflurane are associated have slight degrees of PONV [15]. We conclude that the patients with (30%) have an incidence of nausea and vomiting postoperatively that may be related by causes (age, history of PONV, anxiety, type of operation and anesthetic drugs) And patients with (70%) have no nausea and vomiting incidence postoperatively that may be related by causes (sex, obesity and inhalational agent)(30).Kovac(2007),Chatterjee *et al* .(2011) also obtained similar observations to our current study.

7- **Recommendation**

1. Pediatrics need for prophylactic and therapeutic strategies.
2. Fasting more prefer.
3. Prevent over suctioning.
4. Using antiemetic premedically.
5. Avoid sudden movement and change in posture during recovery.
6. At all time the patient should be reassured.

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حدوث الغثيان والقيءالمصاحب لما بعد العمليات الجراحية للاطفال في مستشفى بغداد التعليمي

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الخلاصة

يعتبر حدوث الغثيان والقيء في مرحلة مابعد التداخل الجراحي من اهم العقبات التي يواجهها الكادر الطبي والتي قد تتسبب باضطراب الوضع الصحي للمريض والنزف الدموي والاستنشاق الرئوي لمحتويات المعدة واختلال تراكيز الاملاح والسوائل الامرالذي قد يطيل من مدة بقاء المريض داخل المستشفى والذي احيانا قد يؤدي لتدهور حالته الصحيه بشكل عام.لقد اجريت العديد من البحوث العلمية والدراسات للحد من حدوث ذلك للوصول لطرق علاجيه كاستخدام تقنيات التخدير الحديثة واعطاء المسكنات والسوائل الوريدية والعلاج الدوائي المتوازن وغير ذلك. ان الهدف من الدراسة هوتقييم نسبة حدوث الغثيان والقيءفي مرحلة مابعد التداخل الجراحي للاطفال(١٤٠)(٧٤ذكور,٦٦اناث) والذين تراوحت اعمارهم من٦الى ١٢سنة ولقد كانت فترة التداخل الجراحي مساوية ولاتتجاوز ٣٠دقيقةولعدة انواع من العمليات الجراحية وبمقياس كتلة الجسم اقل من٣٠,لقد خضعت كل حالات الدراسةللتخدير العام غير الطارئ ولاسئلة استبيان الدراسة.لقد تم متابعة المرضى في غرفة الافاقة وبمايتلاءم وحالة المريض الصحيةوتم التوصل الى ان٣٠بالمئة من حالات الدراسة عانوا من الغثيان والتقيء والذي قد يعزى لاسباب عديدة كالقلق ونوع العملية الجراحية وادوية التخدير المستخدمة واختلاف الجنس,واما الذين لم يعانوا من حدوث الغثيان والقيء فلقد كانت نسبتهم ٧٠بالمئةوالذي قد يكون نتيجة لعدة اسباب كالسمنة ومواد التخدير الاستنشاقية.

الكلمات المفتاحية: الغثيان والقئ مابعد العمليات الجرحية, فئة الاطفال.